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GEOPHYSICAL INVESTIGATION LETTER REPORT NS NORFOLK VA  
10/4/2002  
CH2M HILL



**CH2MHILL**

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October 4, 2002

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Commander  
LANTNAVFACENGCOM  
Attention: Code EV21-RWM Mr. Bob Magee  
Lafayette Annex, Building A  
6506 Hampton Boulevard  
Norfolk, VA 23508-6287

Subject: Navy CLEAN II Program  
Contract No. N62470-95-D-6007  
Contract Task Order 0262  
Geophysical Investigation Letter Report  
Naval Station Norfolk, Sites SC-413 and SC-124

Dear Mr. Magee:

This letter report documents activities and results of the geophysical investigation that was conducted at UST Remediation Sites SC-413 and SC-124 on August 14, 15, and 20, 2002 at Naval Station Norfolk (NSN), Norfolk, Virginia. This investigation was conducted to provide a site study in preparation for site closure at buildings SC-413 and SC-124 at the Staff College. Specifically, the purpose of activity was to evaluate the existence of underground storage tanks (USTs) and associated piping at these two locations at NSN.

#### **BACKGROUND & PURPOSE**

Remediation work started at the SC-413 and SC-124 sites in 1990. During those investigations, soil contamination and free floating liquid hydrocarbon product plumes were detected on the property. A correction action plan (CAP) for these sites recommended that a recovery system be constructed to collect that contamination within the plume. The CAP stipulated that the system be run until the remediation endpoints were obtained. Once this occurred, the site could be closed out. In October 2001, the Virginia Department of Environmental Quality (VDEQ) decided that no further action was necessary and gave permission to close out the sites. Therefore, this geophysical survey was conducted in an effort to verify that all USTs and associated piping have been identified.

#### **SCOPE OF WORK & METHODS UTILIZED**

This study included locating buried metal piping and any underground storage tanks, reporting the findings, and preparing a map of the site showing existing features and discovered buried anomalies.

NEAVA Geophysics, Inc. was subcontracted to perform these efforts, while CH2M HILL provided oversight. A Site-Specific Health and Safety Plan (SSHASP) was prepared by CH2M HILL for this field investigation. The document was retained on site while investigation tasks were being performed. The SSHASP is presented as Attachment A. NAEVA's report for this study is presented as Attachment B, and includes findings of the survey, represented by a site map and relevant figures. The report presents in detail the methods and equipment utilized while performing the survey, including the following:

- Geonics EM-61 time-domain metal-detector – Used initially to survey grid area and generate contour information on-site. Contour map was examined for suspected anomalies.
- Fisher TW-6 Pipe and Cable Locator – Used initially to survey grid area similar to EM-61, but was utilized in two areas of the site which were not ideal for EM-61 data collection due to access and space restriction.
- Sensors & Software Noggin 500 ground-penetrating radar (GPR) unit – Used to further characterize and define some of the anomalies determined from the data collected from the EM-61 and TW-6 (horizontal and vertical data recorded).
- Ashtech Z-FX Surveyor RTK (Real Time Kinematic) Global Positioning System (GPS) – Used to determine the horizontal position of each suspected anomaly, as well as existing site features such as pavement, buildings, monitoring wells, significant surface features, and recovery wells.

## CONCLUSIONS

Included in the results report from NAEVA (Attachment B) is a detailed presentation of the findings of the geophysical survey. Figure 1 is a site map showing the results from the EM-61 readings, including locations of suspected anomalies, GPR lines, and existing site features such as monitoring wells, fence lines, and building limits. In general, five anomalies were identified throughout the site, however none are representative of the presence of a UST. Below are brief descriptions of each anomaly detected, along with the explanation provided by NAEVA as to what may have caused the detection.

- Anomaly 1 – Large rectangular shape, seeming to indicate the presence of a reinforced concrete pad.
- Anomaly 2 – Rectangular shape, seeming to indicate the presence of a reinforced concrete pad.
- Anomaly 3 – Several small metal anomalies spread throughout area, not indicative of the larger defined shape a UST would produce. Suspected cylindrical utility line in the subsurface.
- Anomaly 4 – Two separate, smaller anomalies with irregular shapes, not indicative of any regularly shaped objects/USTs.
- Anomaly 5 – Large, irregular shape, not indicative of any regularly shaped objects/USTs.

NAEVA concluded that the metal anomalies detected were not representative of UST characteristics due to the apparent size and shape of the underground objects, and nature of the electronic readings.

Mr. Bob Magee

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Readings are more indicative of buried scrap metal or building debris. All other metal anomalies on the shown on the map were the result of nearby existing site features such as monitoring wells, fences, or manholes.

### RECOMMENDATIONS

Although the findings of the geophysics investigation are not representative of UST characteristics, it is recommended that the larger anomalies (#1, 2, and 5) be further characterized by careful excavation. This effort would be conducted to confirm that no USTs exist at Sites SC-413 and SC-124 at Naval Station Norfolk. Mobilizing a backhoe at the site for one day to perform this excavation would be sufficient. CH2M HILL is capable of procuring a subcontractor and providing oversight to complete this effort. This data would then be utilized for further evaluation of the site closure at SC-413 and SC-124.

If you have any questions please do not hesitate to call contact me at (757) 460-3734, extension 12.

Sincerely,

CH2M HILL



Paul Landin  
Project Manager

Cc: Ms. Beth Collier/LANTDIV (Cover Letter Only)  
Mr. Dan Oros/CNRMA (1 copy)  
Ms. Holly Rosnick-VBO (1 copy)  
Ms. Erica Mathews-VBO (1 copy)

enc: 1) Site Specific Health and Safety Plan  
2) Results of Geophysical Investigation Report (NAEVA Geophysics, Inc.)